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## Panegyric

### The Midas Touch

Jim Chen \*

Midas, the mythically avaricious king, ascended a throne already exalted by his family's deeds.<sup>1</sup> The oracle at Delphi had prophesied that the next king of Phrygia would arrive in an ox-drawn cart. Gordius, father of Midas, came in a cart and thereupon became king. After dedicating his wagon to Apollo with gratitude for the oracle's prophecy, Gordius secured his cart in the acropolis with a monstrous knot. Whoever should untie this knot would rule all Asia. Many aspirants tried. None succeeded until Alexander of Macedonia, in his impatience, cut the Gordian knot.<sup>2</sup>

The Gordian knot and its Alexandrian solution provide an apt metaphor for a problem that has bedeviled science and the broader culture for nearly half a century. In his celebrated 1959 lecture, *The Two Cultures*, C.P. Snow excoriated the conflict between what he called the scientific and literary cultures. Snow aimed his sharpest criticism for "natural Luddites," the "Western intellectuals who have never tried, wanted, or been able to understand the industrial revolution, much less accept it."<sup>3</sup> The dominant literary culture's refusal to embrace science and its industrial applications, said Snow, condemned humanity's humblest to a wretched, short

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1. See THOMAS BULFINCH, BULFINCH'S MYTHOLOGY: ILLUSTRATED EDITION 46-48 (1979).

2. See, e.g., 2 W.W. TARN, ALEXANDER THE GREAT 262 (1948) ("Everyone, as the phrase goes, knows two things about Alexander, even if they do not know who he was: he was the man who wept because there were no more worlds to conquer, and he was the man who 'cut the knot.'").

3. C.P. SNOW, THE TWO CULTURES: AND A SECOND LOOK 22 (2d ed. 1964).

existence:<sup>4</sup>

Most of our fellow human beings . . . are underfed and die before their time. In the crudest terms, *that* is the social condition. There is a moral trap which comes through th[is] insight into man's loneliness: it tempts one to sit back, complacent in one's unique tragedy, and let the others go without a meal.<sup>5</sup>

In a world "where cultural antipathies are very much alive and kicking," *The Two Cultures* "still resonates."<sup>6</sup> Abiding cultural divides cripple public understanding of a wide range of scientifically sophisticated issues, from global climate change and biodiversity loss to childhood vaccination, embryonic stem cell research, contraception, abortion, and end-of-life decisionmaking.

Crudely stated, the mission of the *Minnesota Journal of Law, Science & Technology* is that of bridging the scientific and literary cultures that Snow found so lamentably divided in 1959. By virtue of our legal training, this journal's editors owe a special duty to ply the intellectual tools unique to what Snow perceived vaguely as "something like a third culture," a community of social scientists "concerned with how human beings are living or have lived."<sup>7</sup> Anyone who would live contemporary life in its immense fullness and complexity must master not only the scientific culture's "basic facts" and "guiding principles of quantitative thought and strict logic," but also the literary culture's "canon of works and expressive techniques."<sup>8</sup> At their best, social sciences such as law, economics, and positive political theory bridge the scientific and literary cultures, much as Snow himself, as a scientist, novelist, and public administrator, traversed all *three* of contemporary civilization's intellectual subcultures.

On May 20, 2005, the *Minnesota Journal of Law, Science & Technology* cosponsored a conference dedicated to the full range of issues affecting law and its interaction with the life sciences.<sup>9</sup>

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4. Cf. THOMAS HOBBES, *LEVIATHAN* 89 (Richard E. Flathman & David Johnston eds., W.W. Norton & Co. 1997) (1651) (describing life as "solitary, poore, nasty, brutish, and short").

5. SNOW, *supra* note 3, at 6-7.

6. *Cultural Divides, Forty Years On*, 398 NATURE 91, 91 (1999).

7. SNOW, *supra* note 3, at 70. See generally Richard A. Posner, *The Decline of Law as an Autonomous Discipline: 1962-1987*, 100 HARV. L. REV. 761 (1987).

8. Frank Wilczek, *The Third Culture: Is Quantum Physics, Like Science and Literature, in a World of Its Own?*, 424 NATURE 997, 997 (2003).

9. This conference, formally called "Where are Law, Ethics & the Life Sciences Headed? Frontier Issues," was also sponsored by the University of Minnesota's Consortium on Law and Values in Health, Environment & the Life

As ambitious as it was immodest, this conference imposed no substantive limits on its participants' freedom to address any point of intersection between the life sciences and the political demands and social aspirations of the law. As a matter of content, this conference pursued the open-ended theme of "law and the life sciences" without regard to internal boundaries within either law or the life sciences. Environmental law, health law, food and drug regulation, biotechnology, law and behavioral psychology, and evolutionary analysis of law share a common scientific core. The best path toward understanding that core lies in embracing the similarities among these legal subdisciplines.

Historian David Christian has argued "that the appropriate time scale for the study of history may be the whole of time."<sup>10</sup> Likewise, the "substantive scale on which law should be studied, taught, and learned is the entirety of human experience."<sup>11</sup> A comprehensive approach to law and the life sciences treats these related disciplines as components of a unified, *consilient* body of knowledge.<sup>12</sup> Mindful that knowledge comprises not only a "*domain*" consisting of "a set of symbolic rules or procedures" but also a "*field*" consisting of "all the individuals who act as gatekeepers to the domain,"<sup>13</sup> the University of Minnesota's conference on law and the life sciences empowered the participants themselves—as distinct from the organizers—to determine the intellectual agenda. Efforts to shape the law according to the teachings of the life sciences, like living things and the systems in which they operate, are most successful when they exhibit the "emergent behavior" of "complex adaptive systems."<sup>14</sup>

Among leading "caricatures" that well-intentioned observers use to describe nature and other complex systems,

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Sciences and Joint Degree Program in Law, Health & the Life Sciences. See <http://www.lifesci.consortium.umn.edu/conferences/lawlifesci.php> (last visited Sept. 30, 2005).

10. David Christian, *The Case for "Big History,"* 2 J. WORLD HIST. 223, 223 (1991).

11. Jim Chen, *The Pragmatic Ecologist: Environmental Protection as a Jurisdynamic Experience*, 87 MINN. L. REV. 847, 849 (2003).

12. See generally EDWARD O. WILSON, *CONSILIENCE: THE UNITY OF KNOWLEDGE* (1998).

13. MIHALY CSIKSZENTMIHALYI, *CREATIVITY: FLOW AND THE PSYCHOLOGY OF DISCOVERY AND INVENTION* 27-28 (1996).

14. STEVEN JOHNSON, *EMERGENCE: THE CONNECTED LIVES OF ANTS, BRAINS, CITIES, AND SOFTWARE* 18 (2001). See generally JOHN H. HOLLAND, *EMERGENCE: FROM CHAOS TO ORDER* (1998).

the predominant view of law is that of a complex system “existing at or near an equilibrium condition.”<sup>15</sup> Conventional depictions of the law treat time neither as “a gulf to be bridged” nor as “a yawning abyss,” but rather as a medium “filled with the continuity of custom and tradition, in the light of which all that is handed down presents itself to us.”<sup>16</sup> Colloquial uses of “law” in other fields, such as Grimm’s law,<sup>17</sup> the third law of thermodynamics, or Zipf’s law,<sup>18</sup> all treat “laws” as immanent, enduring principles that govern natural phenomena. These descriptions of law—in its literal sense as a system of governance and in the figurative sense suggested by the language of science—obscure the role of sudden, even catastrophic, change in legal evolution. “In biological terms, stasis is death; only growth and change keep the organism alive.”<sup>19</sup> To ensure that its “ideas and aspirations . . . survive more ages than one,” the law must respond to upheaval.<sup>20</sup> Judicially and politically negotiated equilibria in law<sup>21</sup> are

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15. C.S. Holling, Lance H. Gunderson & Donald Ludwig, *In Quest of a Theory of Adaptive Change*, in PANARCHY: UNDERSTANDING TRANSFORMATIONS IN HUMAN AND NATURAL SYSTEMS 3, 12 (Lance H. Gunderson & C.S. Holling eds., 2002) [hereinafter PANARCHY]. In addition to this caricature of “Nature Balanced,” other “myths” regarding “stability” in nature, “the processes that affect that stability, and . . . policies that are deemed appropriate” include “Nature Flat,” “Nature Anarchic,” “Nature Resilient,” and “Nature Evolving.” *Id.* at 10-14.

16. HANS-GEORG GADAMER, TRUTH AND METHOD 264-65 (Garrett Barden & John Cumming trans., The Seabury Press 2d ed. 1975) (1960). See generally William N. Eskridge, Jr., *Gadamer/Statutory Interpretation*, 90 COLUM. L. REV. 609 (1990).

17. See LOUIS HJELMSLEV, LANGUAGE: AN INTRODUCTION 128-29 (Francis J. Whitfield trans., Univ. of Wis. Press 1970) (1963) (describing how phonological principles such as Grimm’s Law or Verner’s Law become so entrenched in a particular language that they become “law[s] of state” rather than “law[s] of change”).

18. See GEORGE KINGSLEY ZIPF, HUMAN BEHAVIOR AND THE PRINCIPLE OF LEAST EFFORT: AN INTRODUCTION TO HUMAN ECOLOGY (1949) (describing the distribution of words in natural languages); GEORGE KINGSLEY ZIPF, SELECTED STUDIES AND THE PRINCIPLE OF RELATIVE FREQUENCY IN LANGUAGE (1932) (same).

19. Marci A. Hamilton, *Art Speech*, 49 VAND. L. REV. 73, 76 (1996).

20. *Planned Parenthood v. Casey*, 505 U.S. 833, 901 (1992); cf. *U.S. CONST.* pmbl. (describing the Constitution as having been adopted “in Order to . . . secure the Blessings of Liberty to ourselves and our Posterity”); *McCulloch v. Maryland*, 17 U.S. (4 Wheat.) 316, 415 (1819) (Marshall, C.J.) (“This provision is made in a constitution, intended to endure for ages to come, and consequently, to be adapted to the various crises of human affairs.”).

21. See generally William N. Eskridge, Jr. & Philip P. Frickey, *The Supreme Court, 1993 Term — Foreword: Law as Equilibrium*, 108 HARV. L. REV. 26

episodic at best and prone to violent interruption.<sup>22</sup> The so-called *jurisdynamics* of human governance<sup>23</sup> reflects a sort of “punctuated equilibrium,” reminiscent of Stephen Jay Gould’s description of biological evolution.<sup>24</sup>

The *Minnesota Journal of Law, Science & Technology* is proud to publish a selection of the scholarship presented at what I hope will prove to be the first of many regularly scheduled conferences on law and the life sciences at the University of Minnesota. Two of the articles presented at this conference have already appeared in volume 6 of this journal.<sup>25</sup> This issue presents C.S. Holling’s essay, “From Complex Regions to Complex Worlds,” which offers an ambitious synthesis of complexity theory, evolutionary biology, human history, and law.<sup>26</sup> Responses by J.B. Ruhl and Bradley C. Karkkainen complete this journal’s colloquy on Professor Holling’s provocative approach.<sup>27</sup> This journal expects to publish additional articles from its May 2005 conference in the second issue of volume 7.

Of the numerous ideas presented at that conference and in this volume, the notion of “panarchy” that infuses Professor Holling’s work comes closest to expressing the intellectual ideal to which the *Minnesota Journal of Law, Science & Technology* aspires. In an epochal collection of essays published in 2002, Professor Holling and two coauthors defined panarchy as “an integrative theory” for “understand[ing] the source and role of change in [adaptive] systems”:

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(1994).

22. See Daniel A. Farber, *Earthquakes and Tremors in Statutory Interpretation: An Empirical Study of the Dynamics of Interpretation*, 89 MINN. L. REV. 848 (2005).

23. See generally THE JURISDYNAMICS OF ENVIRONMENTAL PROTECTION: CHANGE AND THE PRAGMATIC VOICE IN ENVIRONMENTAL LAW (Jim Chen ed., 2003); Chen, *supra* note 11.

24. Cf. STEPHEN JAY GOULD, THE PANDA’S THUMB 179-84 (1980) (describing “the episodic nature of evolutionary change” as representative of “punctuated equilibria”).

25. See Rebecca M. Bratspies, *Glowing in the Dark: How America’s First Transgenic Animal Escaped Regulation*, 6 MINN. J.L. SCI. & TECH. 457 (2005); Lyria Bennett Moses, *Understanding Legal Responses to Technological Change: The Example of In Vitro Fertilization*, 6 MINN. J.L. SCI. & TECH. 505 (2005).

26. See C.S. Holling, *From Complex Regions to Complex Worlds*, 7 MINN. J.L. SCI. & TECH. 1 (2005).

27. See Bradley C. Karkkainen, *Panarchy and Adaptive Change: Around the Loop and Back Again*, 7 MINN. J.L. SCI. & TECH. 59 (2005); J.B. Ruhl, *Regulation by Adaptive Management—Is It Possible?*, 7 MINN. J.L. SCI. & TECH. 21 (2005).

Th[is] theory . . . must of necessity transcend boundaries of scale and discipline. It must be capable of organizing our understanding of economic, ecological, and institutional systems. And it must explain situations where all three types of systems interact. The cross-scale, interdisciplinary, and dynamic nature of the theory has [led] us to coin the term *panarchy* . . . .<sup>28</sup>

According to its inventors, panarchy draws “upon the Greek god Pan to capture an image of unpredictable change.”<sup>29</sup> The prefix *pan-* (as in *Pandora*, *Pangaea*, *panegyric*, and *pandemonium*) also denotes “all.” That aspect of panarchy captures its authors’ reliance “upon notions of hierarchies across scales to represent structures that sustain experiments, test results, and allow adaptive evolution.”<sup>30</sup>

A consilient approach toward integrating law and the life sciences should immediately recognize the immense value of the panarchic perspective. Across the wide range of “nonlinear phenomena in ecology, economics, and science in general,” legal policies involving “the application of linear methodology [are] not only mistaken but also harmful.”<sup>31</sup> To the extent that law represents nothing more and nothing less than “the enterprise of subjecting human conduct to the governance of rules,”<sup>32</sup> the legal project at its idealized apex can brook no such failure as might arise from unthinking adherence to rigidly classical models of science and of human governance. Static “caricatures” of law and of nature cause nothing but trouble.

Perhaps the starkest contrast between the scientific and literary cultures of C.P. Snow’s celebrated lecture appears in these two cultures’ regard for the past. Whereas a “science which hesitates to forget its founders is lost,”<sup>33</sup> the literary culture reserves its highest regard for “giants in the earth” in

28. Holling, Gunderson & Ludwig, *supra* note 15, at 5.

29. *Id.*

30. *Id.*

31. Ralf Yorque et al., *Toward an Integrative Synthesis*, in PANARCHY, *supra* note 15, at 419, 424.

32. LON L. FULLER, THE MORALITY OF LAW 122 (rev. ed. 1969).

33. ALFRED NORTH WHITEHEAD, THE AIMS OF EDUCATION & OTHER ESSAYS 162 (1929); *see also* WILSON, *supra* note 12, at 199 (“[P]rogress in a scientific discipline can be measured by how quickly its founders are forgotten.”); *cf.* J.E. LOVELOCK, GAIA: A NEW LOOK AT LIFE ON EARTH 70 (1979) (“It is somewhat cynically said that the eminence of a scientist is measured by the length of time that he holds up progress in his field.”). On collective memory and oral tradition in science, *see generally* 14 OSIRIS (COMMEMORATIVE PRACTICES IN SCIENCE: HISTORICAL PERSPECTIVES ON THE POLITICS OF COLLECTIVE MEMORY) (1999); and Bruno J. Strasser, *Who Cares About the Double Helix?*, 422 NATURE 803 (2003).

days “of old,” in days “of renown.”<sup>34</sup> To the extent that the law yearns for ancient, even legendary, inspiration, it favors the literary culture in the war of values that Snow decried. The emphatically scientific proponents of panarchy, however, might begrudge the law’s indulgence for history and accumulated wisdom if the cultural paragon in question is Gordius’s least celebrated successor as king of Phrygia. We speak, of course, of Gordius’s son and heir, Midas.

Midas is best known for his golden touch, a divinely granted talent for alchemy that soon became his dreaded “first gift [of] making stone out of everything.”<sup>35</sup> Midas sheds relatively little light on law and the life sciences, except to remind us that no good comes of efforts to turn dross to gold—or stone to bread.<sup>36</sup> I invoke instead an older, chastened Midas, who having come to “hat[e] wealth and splendor” after his golden adventure, “dwelt in the country, and became a worshipper of Pan.”<sup>37</sup> Long before Midas had come to the Phrygian throne, in those days when Greek cosmology really did speak of “giants in the earth,”<sup>38</sup> Hermes invented the lyre by stringing nine cords (one in honor of each of the Muses) across a tortoise shell.<sup>39</sup> Hermes gave the lyre to Apollo, who mastered the instrument and thereby imposed his rigid sense of order and symmetry on music. Pan, for his part, played pipes. His “rustic melod[ies]” graced the dominion he ruled as “the god of the fields.”<sup>40</sup>

“On a certain occasion Pan had the temerity to compare his music with that of Apollo, and to challenge the god of the lyre to a trial of skill.”<sup>41</sup> This contest, which we may call by the metrically satisfying if ungeographically inaccurate name “Athenian Idol,” ended in Apollo’s favor. Alone among the judges, Midas disagreed. He preferred Pan’s less harmonious but ultimately more satisfying music. The irate Apollo exacted due revenge from Midas by giving him ears “on the perfect pattern of those of

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34. *Genesis* 6:4 (King James).

35. SYLVIA PLATH, *The Rival*, in *ARIEL* 48, 48 (1965).

36. *Compare Luke* 4:3-4 (King James) with W.H. AUDEN & CHESTER KALLMAN, *THE RAKE’S PROGRESS* (1951).

37. BULFINCH, *supra* note 1, at 47.

38. *See id.* at 4-5 (describing the overthrow of the Titans by the Olympic gods).

39. *See id.* at 7-8.

40. *Id.* at 47.

41. *Id.*



an ass.”<sup>42</sup> By roundabout means, the truth of Midas’s humiliation reached the reeds, and to this day the secret of Midas’s asinine ears is carried in the breeze.

In a panarchic world, Midas correctly judged the musical duel between Apollo and Pan. A panarchic world does not observe rules of order. Rather, it undergoes unpredictable change. Within human efforts to survive, perchance to manage, that panarchic world, perhaps the only constant is indelible instinct for beauty. Over the course of civilization, humanity has moved from using clever “observation and classification to document the subtle anatomy of flowers” to “the brink of answering . . . more fundamental question[s]” having “more to do with patterns developing over time than with static structure.”<sup>43</sup> Our numerous “attempt[s] to imitate the beautiful movements of Nature” represent significant, even spiritual, steps in the “development of [our] love of the beautiful.”<sup>44</sup> The best scientific work has “always tried to unite the true with the beautiful.”<sup>45</sup> When the physicist Hermann Weyl “had to choose one or the other,” however, he “usually chose the beautiful.”<sup>46</sup> As John Keats expressed the point from the very heart of the literary culture, “Beauty is truth, truth beauty,’ — that is all / Ye know on earth, and all ye need to know.”<sup>47</sup>

In a natural world shaped by random variation, adaptation, and sexual selection, chaotic Pan routinely and systematically defeats ordered, stable Apollo. *Panic*, perhaps, the English word whose meaning is most directly traceable to the Greek god of pastoral life, more aptly describes nature and the life sciences than either stability or sustainability. Among the mortal heroes of Greek mythology, Midas alone understood that truth. Some among the gods did keep him company, though. It bears remembering, after all, who gave Apollo the lyre in the first place and what he got in return. In exchange for the seductively symmetrical but ultimately misleading music of the lyre, Apollo gave Hermes the caduceus, the

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42. *Id.*

43. JOHNSON, *supra* note 14, at 49.

44. NATHANIEL HAWTHORNE, *The Artist of the Beautiful*, in THE COMPLETE SHORT STORIES OF NATHANIEL HAWTHORNE 421, 423 (1959). *See generally* EDWARD O. WILSON, *BIOPHILIA* (1984).

45. Freeman J. Dyson, *Obituaries*, 177 NATURE 457, 458 (1956) (quoting Hermann Weyl), *quoted in* WILSON, *supra* note 44, at 61.

46. *Id.*

47. JOHN KEATS, *Ode on a Grecian Urn*, in A KEATS SELECTION 166 (Norman Howlings ed., St. Martin’s Press 1966).

serpent-entwined rod that now symbolizes medicine.<sup>48</sup> In Greek myth Hermes was a speedster nonpareil, the messenger of the gods, and the ruling deity of science and commerce. He also served as the patron of travelers, rogues, vagabonds, and thieves.<sup>49</sup> The entire story of Midas as musical judge thus tells how Hermes surreptitiously swapped a soothing but incomplete artistic sensibility for comprehensive knowledge of—and power over—life itself.

The intertwined stories of Midas, Hermes, and Pan demonstrate, as would any complete account of the scientific method, that no claim to truth in law, the life sciences, or any other intellectual enterprise is easy, predictable, durable, or final. What myth teaches science is that the path to earthly wisdom is invariably mercurial. In honor of the panarchic spirit that Midas found so instinctively and correctly alluring, my fellow editors and I dedicate this volume of the *Minnesota Journal of Law, Science & Technology* to all of us who likewise have long heard, and always will hear, the music.<sup>50</sup>

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48. See BULFINCH, *supra* note 1, at 7-8.

49. See *id.* at 7.

50. Cf. JOSEPH CAMPBELL & BILL MOYERS, THE POWER OF MYTH, at vii (Betty Sue Flowers ed., 1988) (dedicating Campbell's final book "[t]o Judith, who has long heard the music").